

MMS ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

Region: Alaska

Planning Areas: Beaufort Sea

Title: Continuation of Arctic Nearshore Impact Monitoring in Development Area (cANIMIDA) (AK-03-14)

MMS Information Need(s) to be Addressed: Northstar construction started during the ANIMIDA study and production started in November 2001. Liberty, if initiated, could start construction sometime during the period of cANIMIDA. Interagency reviews of related EISs and Development and Production Plans recommend monitoring effects of Northstar and the possible Liberty development. There is a continuing, ongoing need for this monitoring information during the performance period of the study, which will coincide with production from Northstar and possible Liberty construction. The information will be used for NEPA analysis and documentation for Beaufort Sea Lease Sales and DPPs.

Total Cost: \$4,247,000

Period of Performance: FY 2003-2008

Conducting Organization: Battelle; LGL, Alaska; Applied Sociocultural Research

MMS Contact: [Chief, Alaska Environmental Studies Section](#)

Description:

Background The Arctic Nearshore Impact Monitoring in Development Area (ANIMIDA), a five-year study started in 1999, has provided baseline data and monitoring results for chemical contamination, turbidity, and subsistence whaling in the vicinity of Northstar and Liberty development sites. Northstar is in State waters, but includes production of some OCS oil through directional drilling. Liberty, if approved, will be the first offshore OCS development project in the Beaufort Sea or elsewhere in the Alaska OCS. ANIMIDA monitoring for Northstar includes pre-construction, and construction, and early production periods. The last field sampling for ANIMIDA occurred in 2003. This study started field work in FY 04, with an initial planning phase and Core Contractor funded and procured under FY 03 appropriations.

Objectives This study will gather long term monitoring data which will provide a basis of continuity and consistency in evaluation of potential effects from site-specific, recently initiated development and upcoming production in the Beaufort Sea OCS. Currently, these site-specific areas include the Northstar and Liberty areas, other prospects would be included if proposed for development. Priority monitoring issues will be established through public and interagency comment, and coordinated with lessees and other organizations. At minimum, we expect cANIMIDA to continue the following ANIMIDA objectives:

1. Hydrocarbon and metal characterization of sediments, bivalves and amphipods in the study area.
2. Annual assessment of subsistence whaling near Cross Island.

3. Sources, concentrations, and dispersion pathways for suspended sediment.
4. Monitoring the Boulder Patch.
5. Characterization of anthropogenic contaminants in upper tropic biota.

Methods Field logistics for both phases include helicopter support and small vessel (e.g., MMS Launch 1273) support in the “open” water season and snow machine support in winter/spring. Samples will be collected from construction gravel pits, artificial islands, rivers, barrier islands, and sediment from ANIMIDA offshore stations and along the proposed Liberty pipeline route.

Turbidity, total suspended sediment, current velocity measurements are being made in the vicinity of construction, spoils dumps and other sites including local rivers and the Boulder Patch. Sediment and suspended sediment samples will be analyzed for PAH, trace metals, and supporting chemistry using methods consistent with prior ANIMIDA analyses. Biota sampling (species and contaminants measured) will be based on results and recommendations from ANIMIDA. Kelp productivity will be monitored in the Boulder Patch and will use the inherent optical properties of the ice and water to evaluate the effect of sediment resuspension on kelp productivity. Optical-related measurements will include spectral irradiance, light scattering coefficients, and total suspended solids. The reporting program for Cross Island whaling, which records information on whaling locations, success, and whaler perceptions, will be supported. Field programs were conducted in 2003-2006 for contaminant tasks and 2003-2007 for Boulder Patch and Cross Island Whaling tasks.

Current Status:

The participants are currently completing final reports for the seven (7) cANIMIDA tasks. Results from cANIMIDA will be presented in a series of presentations at the March 2008 Ocean Sciences Meeting in Orlando, Florida as part of peer review.

Final Reports Due: September 2008

Publications Completed:

- Alkire, M. B.; Trefry, J. H. 2006. Transport of Spring Floodwater from Rivers under Ice to the Alaskan Beaufort Sea. *Journal of Geophysical Research - Oceans* 111(C12): 12 pp.
- Aumack, C.F., K.H. Dunton, A.B. Burd, D.W. Funk, and R.A. Maffione. 2007. Linking light attenuation and suspended sediment loading to benthic productivity within an arctic kelp bed community. *Journal of Phycology* 43:853-863.
- Brown, J., P. Boehm, L. Cook, J. Trefry, and G. Durell. 2005. The MMS cANIMIDA Program: Hydrocarbon Chemistry of Sediments in the Nearshore Beaufort Sea. Proceedings of the Tenth MMS Information Transfer Meeting and Barrow Information Update Meeting, pp. 35-37. Anchorage, AK: Prepared by MBC Applied Environmental Sciences, Costa Mesa, CA for MMS Alaska OCS Region. MMS OCS Study 2005-036.
- Dunton, K. H., D. Funk, and K. Iken. 2005. Long-Term Monitoring of the Kelp Community in the Stefansson Sound Boulder Patch: Detection of Change Related to Oil and Gas Development. Proceedings of the Tenth MMS Information Transfer Meeting and Barrow Information Update Meeting, pp. 39-42. Anchorage, AK: Prepared by MBC Applied

- Environmental Sciences, Costa Mesa, CA for MMS Alaska OCS Region. MMS OCS Study 2005-036.
- Dunton, K.H., T. Weingartner and E.C. Carmack. 2006. The nearshore western Beaufort Sea ecosystem: circulation and importance of terrestrial carbon in arctic coastal food webs. *Progress in Oceanography* 71:362-378.
- Durell, G. 2005. Continuation of Arctic Nearshore Impact Monitoring in Development Area (CANIMIDA): Overview. Proceedings of the Tenth MMS Information Transfer Meeting and Barrow Information Update Meeting, pp. 33-34. Anchorage, AK: Prepared by MBC Applied Environmental Sciences, Costa Mesa, CA for MMS Alaska OCS Region. MMS OCS Study 2005-036.
- Durell, G.; Neff, J.; Brown, J.; Trefry, J. 2006. Monitoring the Impact of Near-Shore Development and Production in the Arctic Beaufort Sea, Alaska. SPE International Health, Safety, and Environment Conference held April 2-4, 2006 in Abu Dhabi, UAE.
- Galginaitis, M. 2005. Annual Assessment of Subsistence Bowhead Whaling Near Cross Island 2004. Proceedings of the Tenth MMS Information Transfer Meeting and Barrow Information Update Meeting, pp. 107-9. Anchorage, AK: Prepared by MBC Applied Environmental Sciences, Costa Mesa, CA for MMS Alaska OCS Region. MMS OCS Study 2005-036.
- Neff, J. M. 2005. Integrated Biomonitoring and Bioaccumulation of Anthropogenic Compounds in Biota of the CANIMIDA Study Area. Proceedings of the Tenth MMS Information Transfer Meeting and Barrow Information Update Meeting, pp. 36-27 Anchorage, AK: Prepared by MBC Applied Environmental Sciences, Costa Mesa, CA for MMS Alaska OCS Region. MMS OCS Study 2005-036.
- Rember, R.D. and Trefry, J.H. (2004) Increased concentrations of dissolved trace metals and organic carbon during snowmelt in rivers of the Alaskan Arctic. *Geochimica et Cosmochimica Acta* 68:477-489, doi: 10.1016/S0016-7037(03)00458-7.
- Trefry, J.H., Rember, R.D., Trocine, R.P. and Brown, J.S. (2003) Trace metals in sediments near offshore oil exploration and production sites in the Alaskan Arctic. *Environmental Geology* 45:149-160, doi: 10.1007/s00254-003-0882-2.
- Trefry, J. H., R. P. Trocine, M. B. Alkire, D. W. Woodall, R. D. Rember, M. Savoie, and G. Durell. 2005. Sources, Concentrations and Dispersion Pathways for Suspended Sediments and Partitioning of Potential Pollutants Between Dissolved and Particulate Phases. Proceedings of the Tenth MMS Information Transfer Meeting and Barrow Information Update Meeting, pp. 37-38 Anchorage, AK: Prepared by MBC Applied Environmental Sciences, Costa Mesa, CA for MMS Alaska OCS Region. MMS OCS Study 2005-036.

Affiliated WWW Sites:

<http://www.mms.gov/envmonitoring/CANIMIDA.htm>
<http://www.fit.edu/faculty/profiles/profile.html?value=70>
<http://www.armadaproject.org/rsrch-exp/2006-2007/deichstetter.htm>
<http://www.mms.gov/alaska/>

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